

Claims

1. A silicon-containing liquid composition having a water concentration of 50% by weight or more and a light 5 transmittance of 70% or more, wherein the silicon-containing liquid composition is a composition capable of forming a film on a substrate having a water contact angle of 60° or more.

10 2. The silicon-containing liquid composition according to claim 1, wherein the substrate is a substrate covered with an organic substrate or an organic film.

15 3. The silicon-containing liquid composition according to claim 1 or 2, which comprises the following components (A) to (E) and wherein the concentration of the component (A) is 6% by weight or less calculated as SiO₂ and the concentration of the component (C) is 50% by weight or more:

20 Component (A): an organosilicate or an oligomer thereof, 100 parts by weight calculated as SiO₂,

Component (B): a catalyst for hydrolysis and condensation, 0.1 to 10 parts by weight,

Component (C): water, 100 to 50000 parts by weight,

25 Component (D): an organic solvent, 100 to 50000

parts by weight, and

Component (E): an aqueous resin component, 10 to 1000 parts by weight as a solid matter.

5 4. The silicon-containing liquid composition according to claim 1 or 2, which comprises the following components (A) to (E) and wherein the concentration of the component (A) is 6% by weight or less calculated as SiO₂ and the concentration of the component (C) is 50% by weight
10 or more:

Component (A): an organosilicate or an oligomer thereof, 100 parts by weight calculated as SiO₂,

Component (B): a catalyst for hydrolysis and condensation, 0.5 to 5 parts by weight,

15 Component (C): water, 500 to 25000 parts by weight,

Component (D): an organic solvent, 200 to 10000 parts by weight, and

Component (E): an aqueous resin component, 10 to 1000 parts by weight as a solid matter.

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5. The silicon-containing liquid composition according to any one of claims 1 to 4, which contains a surface tension depressant as a component (F) in a concentration of 0.1 to 2.0% by weight.

25 6. The silicon-containing liquid composition

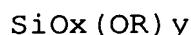
according to any one of claims 1 to 5, wherein the component (E) is an aqueous emulsion.

7. The silicon-containing liquid composition
5 according to claim 6, wherein the component (E) is an aqueous emulsion selected from (meth)acrylic resin-based, styrene-acrylic resin-based, acrylic silicon resin-based, fluororesin-based, urethane resin-based, and urethane-acrylic resin-based ones.

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8. The silicon-containing liquid composition according to any one of claims 1 to 7, wherein the component (A) is methyl silicate or an oligomer thereof.

15 9. The silicon-containing liquid composition according to any one of claims 1 to 8, wherein the component (A) is represented by the following formula:



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wherein $0 \leq x \leq 1.2$, $1.6 \leq y \leq 4$, and $2x+y=4$.

10. A silicon-containing liquid composition, which comprises the following components (A) to (E) and wherein
25 the concentration of the component (A) is 6% by weight or

less calculated as SiO₂ and the concentration of the component (C) is 50% by weight or more:

Component (A): an organosilicate or an oligomer thereof, 100 parts by weight calculated as SiO₂,

5 Component (B): a catalyst for hydrolysis and condensation, 0.1 to 10 parts by weight,

Component (C): water, 100 to 50000 parts by weight,

Component (D): an organic solvent, 100 to 50000 parts by weight, and

10 Component (E): an aqueous resin component, 10 to 1000 parts by weight as a solid matter.

11. A silicon-containing liquid composition, which comprises the following components (A) to (E) and wherein the concentration of the component (A) is 6% by weight or less calculated as SiO₂ and the concentration of the component (C) is 50% by weight or more:

Component (A): an organosilicate or an oligomer thereof, 100 parts by weight calculated as SiO₂,

20 Component (B): a catalyst for hydrolysis and condensation, 0.5 to 5 parts by weight,

Component (C): water, 500 to 25000 parts by weight,

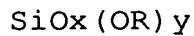
Component (D): an organic solvent, 200 to 10000 parts by weight, and

25 Component (E): an aqueous resin component, 10 to

1000 parts by weight as a solid matter.

12. The silicon-containing liquid composition according to claim 10 or 11, which contains a surface 5 tension depressant as a component (F) in a concentration of 0.1 to 2.0% by weight.

13. The silicon-containing liquid composition according to claim 10 or 11, wherein the component (A) is 10 represented by the following formula:



wherein $0 \leq x \leq 1.2$, $1.6 \leq y \leq 4$, and $2x+y=4$.

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14. A process for producing the silicon-containing liquid composition according to any one of claims 1 to 13, which comprises mixing components (A) to (D) so that the concentration of the component (A) becomes from 2 to 6% by 20 weight calculated as SiO_2 to achieve hydrolysis and condensation of the component (A), subsequently adding the component (C) and/or the component (D) to dilute the mixture two times by weight or more, and adding a component (E) or a component (E) and a component (F) thereto.

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15. A coating process which comprises applying the silicon-containing liquid composition according to any one of claims 1 to 13 onto a surface of a substrate and drying the composition to form a coated film.

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16. A coated film formed by applying the silicon-containing liquid composition according to any one of claims 1 to 13 onto a substrate.

10 17. The coated film according to claim 16, which is colorless and transparent.

18. The coated film according to claim 16 or 17, wherein a water contact angle is 60° or less.

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19. The coated film according to any one of claims 16 to 18, wherein change in whiteness (ΔL) of the coated film subjected to an exposure test according to the following exposure test method is 5 or less, the exposure test method being as follows: an outdoor exposure test is performed for three months according to the JIS Z2381 direct exposure test method, provided that an exposure angle is 60° from a horizontal plane.